

Acknowledgments

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Introduction

Wrecks and the artifacts associated with them tell a story. Removing or otherwise disturbing artifacts, treating them as commodities that can be sold, obliterates that story. Nautical archaeological and maritime sites are finite, and are significant submerged cultural resources. Nautical, maritime, underwater, maritime terrestrial - Maritime Heritage Minnesota's (MHM) deals with all of these types of sites throughout the State of Minnesota. MHM's Mission is to document, conserve, preserve, and when necessary. excavate these finite cultural resources where the welfare of the artifact is paramount. MHM is concerned with protecting our underwater and maritime sites - our shared Maritime History – for their own benefit in order for all Minnesotans to gain the knowledge that can be obtained through their study. MHM's study of wrecks does not include the removal of artifacts or damaging the sites in any way. MHM does not raise wrecks or 'hunt' for 'treasure'. Submerged archaeological sites in Minnesota are subject to the same State statues as terrestrial sites: the Minnesota Field Archaeology Act (1963), Minnesota Historic Sites Act (1965), the Minnesota Historic District Act (1971), and the Minnesota Private Cemeteries Act (1976) if human remains are associated with a submerged site. Further, the case of State v. Bollenbach (1954) and the Federal Abandoned Shipwrecks Act of 1987 provide additional jurisdictional considerations when determining State oversight and "ownership" of resources defined by law as archaeological sites (Marken, Ollendorf, Nunnally, and Anfinson 1997, 3-4). Therefore, just like terrestrial archaeologists working for the State or with contract firms, underwater archaeologists are required to have the necessary education, appropriate credentials, and hold valid licenses from the Office of the State Archaeologist (OSA).



MHM's dive crew preparing to dive on an anomaly in Lake Minnetonka (by Mark Slick)

Preface

MHM completed remote sensing side and down imaging surveys of sections of the Headwaters Mississippi River and the Minnesota River in 2010 and 2011. MHM completed the first comprehensive sonar surveys of any Minnesota lake in 2011-2012 with the thorough investigations of Lake Minnetonka (14,528 acres), White Bear Lake (2,416 acres), and Lake Waconia (3,080 acres). The study – that is still ongoing – of these three larger lakes provided MHM the opportunity to hone the research methods and data interpretation that allowed the completion of 6 different archaeological analyses during the Minnesota Suburban Lakes Survey Project (MSLS). Lake Elmo (LE, 206 acres), Lake Johanna (LJ, 213 acres), Lake Pulaski (LP, 702 acres), Lake Sylvia (LS, 1,524 acres), Medicine Lake (ML, 886 acres), and Upper and Lower Prior Lake (PL, 1,238 acres) were chosen for study, and the fieldwork was conducted from mid-September to early October 2016. MHM prepared six project reports, one for each lake documented using sonar.

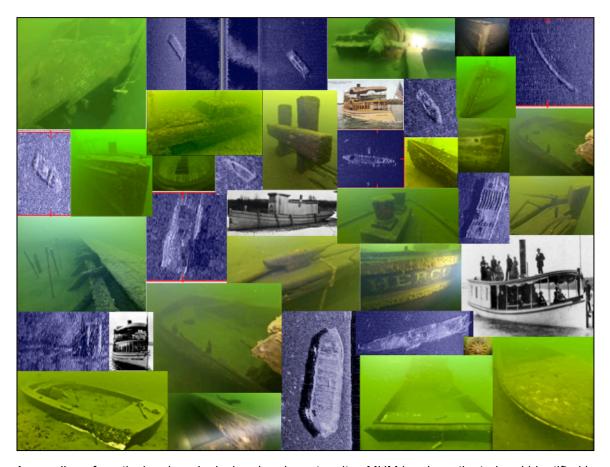


The locations of the 6 lakes surveyed during the MSLS Project.

Research Design

The MSLS Project is a pre-disturbance Phase 1 underwater archaeological side and down imaging sonar survey of 6 lakes (mentioned above) in 5 counties – Hennepin, Ramsey, Scott, Washington, and Wright. This project is a primary step toward the identification and documentation of submerged cultural resources in Minnesota. MHM

chose the six lakes mentioned above for the MSLS Project. The purpose of the MSLS Project is to increase the collective maritime archaeological and historical knowledge of Minnesotans through the documentation of the 6 suburban lakes. The specific goal of sonar survey is the recording of anomalies on the lake bottoms and identifying their possible natures. The side and down-imaging sonar unit creates high-resolution digital images; the sonar data accumulated during the fieldwork will be reviewed and analyzed with the intention of identifying anomalies that may be human-made sites such as wrecks (dugout canoes, steamers, sailboats, rowboats, canoes, barges, motorboats), maritime infrastructure (pier/dock remains, water intakes), other maritime-related artifacts (steam boilers, fish houses), vehicles (cars, trucks, snowmobiles), and other objects. In the future, the positive identification – and significance – of the anomalies will be confirmed through underwater archaeological reconnaissance fieldwork using SCUBA, digital video, measured drawings, and maritime historical research. The 6 lakes chosen for evaluation and assessment during the MSLS Project were chosen for the MSLS Project because of their size, location, and the confirmed maritime activities occurring on and around them, determined by graphic and preliminary historical research.



A sampling of nautical archaeological and underwater sites MHM has investigated and identified in Lake Minnetonka. Similar wrecks may be recorded by the sonar unit during the MSLS Project (photos by MHM volunteers Kelly Nehowig, Ed Nelson, and Mark Slick; sonar images recorded by MHM).

The combined area of the 6 lakes is 4,769 acres. All of the project lakes are under 1,600 acres, with 4 of them under 900 acres and 2 of them under 300 acres. The size of the target lakes for the MSLS Project is significant because until now, no nautical, maritime, or underwater archaeological or historical research has been conducted in what is considered a 'smaller' lake in Minnesota. MHM chose these particular smaller lakes because, like Lake Minnetonka, Lake Waconia, and White Bear Lake, they are located outside of the Twin Cities proper, but are suburban and close enough to Minneapolis and St. Paul for day or weekend trips by lake-bound Minnesotans even in the late 19th Century. Historically, these lakes had holiday resorts on their shores that allowed local residents and visitors to use them as vacation destinations. The resorts often had fleets of sailing and rowing boats for use by their guests, and in some cases, steam launches, larger boats, and personal motorboats. Furthermore, local residents used these lakes for efficient daily transportation. Therefore, maritime activities - boat transportation and recreation that required maritime infrastructure and a terrestrial transportation system (horses, streetcars, railroads, roads, cars) to function - are comparable to Lakes Minnetonka, Waconia, and White Bear on a smaller scale. The MSLS Project will be the first systematic and comprehensive remote sensing survey of a group of smaller suburban lakes that share traits with the well-known larger suburban lakes already surveyed. With this in mind, the process of recording, locating, and identifying anomalies that may be submerged cultural resources that will ultimately be investigated archaeologically using SCUBA is even more important - the maritime history and nautical/maritime/underwater archaeology of these 6 lakes are unknowns. The data collected during the MSLS Project is the first step in the process to determine the extent of submerged cultural resources located on the bottoms of these 6 suburban lakes.

Methodology

A side and down imaging remote sensing sonar survey conducted on a lake is akin to 'mowing the lawn' – transects are run either north/south or east/west depending on wind conditions, lake traffic, and the placement of obstructions such as islands, sandbars, shallow areas, docks, and piers. The length and duration of each transect cannot be known until the day of the survey and is dependent on water depth, and the presence of weeds, islands, docks, and other boats. Ideally, each transect runs north/south or east/west for orderly data analysis, but diagonal transects are often required because lakes are usually not large open squares. The GPS data received by the sonar unit's antenna is imbedded in the recording produced of each transect; this feature allows accurate and efficient anomaly location by determining its latitude and longitude. Many anomalies remain unidentified until their nature can be determined by dive reconnaissance. However, the basic nature of some anomalies can be determined by sonar data analysis with specific questions about the site or object answered using dive reconnaissance.



'Mowing the Lawn' at Lake Pulaski in 2016. Similar side and down imaging sonar survey transects were run on Prior Lake, Lake Elmo, Lake Johanna, Medicine Lake, and Lake Sylvia.

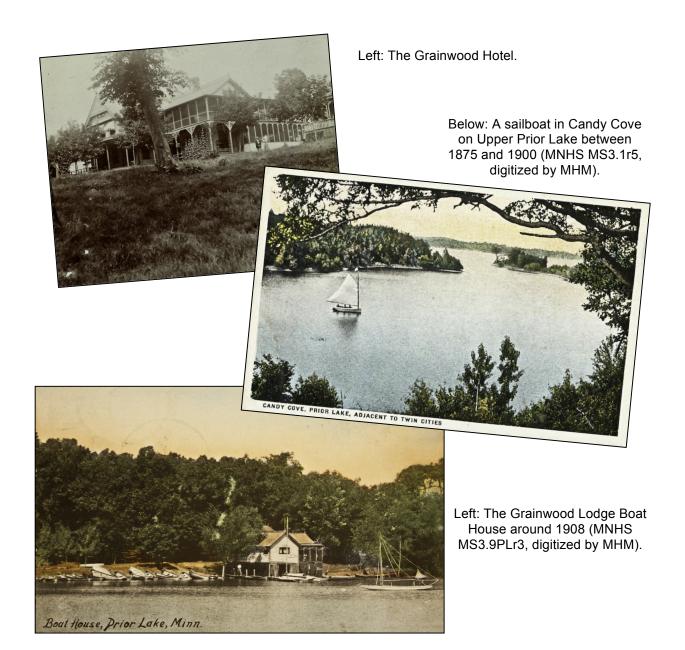
Results of the Minnesota Suburban Lakes Project Prior Lake – Upper and Lower

Archaeology and History

In archaeological terms, the area around Prior Lake in Scott County south of Minneapolis was populated during the Woodland Period as evidenced by the Effigy Mounds (21-SC-16) group, 5 mounds shaped like birds and 4 of the linear type overlooking the Upper Lake. Unfortunately, a housing development obliterated the mounds – with no archaeological reconnaissance performed prior to construction – in the mid-1980s, an illegal act under Minnesota law. Other evidence of Pre-Contact habitation of the Prior Lake area comes in the form of 2 pieces of chert debitage (21-HE-83, High School Overlook Site) southwest of Lower Prior Lake (Anfinson 2010; Arzigian and Stevenson 2003, 487; Harrison 2001).

The Dakota name for the Prior Lake itself is Mde-maya-to, 'Blue Lake of the Hills'. The town, and by association the lake, was named for Charles H. Prior of the Chicago, Milwaukee and St. Paul Railway. This 'railway village' was platted in 1875; the downtown area is located east of Upper Prior Lake and to the south of Lower Prior Lake. In reference to watercraft, in 1889 the launching of a "handsome row boat on Prior Lake" that cost \$60 made news (Felix 1954; *Irish Standard* 1889; Upham 1920, 508-509).

Resorts. With its 50-plus miles of shoreline, the lake was a vacation destination for people from the East Coast and American South; numerous resorts were located around Upper and Lower Prior Lake during the last quarter of the 19th and into the 20th Centuries. The village of Grainwood was a summer home and resort area, with the Grainwood Hotel a draw for visitors. By 1879, the train station on the lake that had a siding leading to the resort. The Grainwood's visitors were treated to rides on the sailboat Lulu and they had access to canoes, rowboats for fishing, and catamarans. On August 2, 1879, the employees of the Chicago, Milwaukee & St. Paul Railway had their 4th annual picnic on Prior Lake, hosted by Captain William E. Hull at his Grainwood Lodge. Other visits to Prior Lake and Grainwood by public figures were newsworthy. Railway superintendent Kellie and his family, along with his wife's parents (Minneapolis Alderman Phillips and his wife), made a guick stop at Grainwood one Saturday. They rowed a boat to a small island to inspect a loon's nest and enjoyed boating and fishing for the day. Further, Judge J.L. MacDonald and his wife from Shakopee spent time with Captain Hull, their fishing guide on Upper Prior Lake. Other people of note visiting the lake include a daughter of Senator A.H. Traux and W.B. Reed of Hastings used Prior Lake for the operation of his steam yacht Salus. Another notable visitor to Prior Lake was Captain W. Jennings and his family. Captain Jennings, characterized as "a real true blue sea captain", sailed Grainwood's yacht Lulu "to the best advantage, taking the good of every breeze for a sail down the lake." In December 1890, Captain Hull was forced to put Grainwood and other holdings on and near Prior Lake, up for auction. Included in these offerings were sections of two islands, a farm, part of the town of Grainwood and Grainwood Park, and a large amount of dry goods (Felix 1954; St. Paul Daily Globe 1879; 1886Aa-c; 1890).

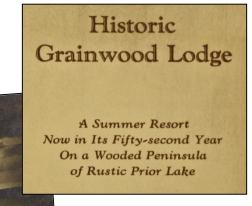


At some point, Hull's daughter and her husband, Mr. and Mrs. L.T. Van Slyke, took possession of the Grainwood Hotel. In the early 20th Century, the Grainwood Lodge described itself and its 24 cottages as "a summer resort...on a wooded peninsula of rustic Prior Lake" and its clientele was primarily from the southern United States. The Lodge was promoting its services to Twin Cities residents because it was "only twenty-seven miles the heart of Minneapolis over the new paved Lyndale Highway". The Grainwood Hotel burned down in 1923 and was not replaced. Another resort based on Prior Lake during the early 20th Century was The Maples, operated by Mrs. J. Van Slyke. Fish Point Resort and the Green Heights Resort were other Prior Lake destinations; they survived into the mid-20th Century, along with Rau's Resort, Pexa Resort, Watzle's Resort, and Schrader's Resort (Durand 1954; Felix 1954; *Minneapolis Journal* 1901, 1903; Van Slyke 1928).

Right: The title page of the Grainwood Lodge brochure (Van Slyke 1928, digitized by MHM).

Below: The Grainwood Lodge Boathouse and boaters in the early 1900s (MNHS MS3.1r4, digitized by MHM).

FISHING RESORT



Phone 704

PROPRIETOR

Right: Fish Point Resort surrounded by a gas launch, canoe, and rowboats around 1910.

Lake Neighborhoods. In the mid-1890s, large 7-room cottages were advertised for sale or rent, properties with amenities that included "ice, wood and boat" and "boat, furniture, ice house...beautiful spot; good fishing". Another cottage for sale, along with its "well filled ice house and good boat" were deemed a bargain by their owner, it's location being near the Grainwood Hotel. During the late 19th and early 20th Centuries, most of the year-round residents on Prior Lake's shoreline were resort or hotel proprietors. By the 1920s, however, improved transportation infrastructure allowed for Twin City residents to move south and commute to Minneapolis and St. Paul for work. As an illustration, in 1924 large sections of land on the shore of Upper and Lower Prior Lake were being parceled and sold. One of the neighborhoods was Maple Park Shore Acres, a name still applied to this subdivision on the west side of Lower Prior Lake. One the east side of Upper Prior Lake, the Inguadona Beach neighborhood and its 200 large lots was described as the "Most Picturesque Wooded Wonder Tract...on Minnesota's most perfect highway, - Trunk highway Number 9". More interestingly, Prior Lake was referred to as "Minnesota's Second Minnetonka" as a selling point (Hannen 1924a-b, Irish Standard 1897; St. Paul Daily Globe 1894, 1895).



Left and Below: A brochure touting the benefits of owning a lot in the Inguadona Beach neighborhood on Prior Lake, "Minnesota's Second Minnetonka" (Hannen 1924a, digitized by MHM).

PRICES \$200 to \$650 TERMS

\$25 down and \$10 a month

RIOR LAKE has over 50 miles of shore line and located 22 miles from St. Paul and Minneapolis, and famous for its Black Bass, Croppies and Sun Fish. Our property lies just one mile from the town of Prior Lake, and on Minnesota's most perfect highway, -- Trunk highway Number 9.

Prior Lake is Minnesota's Second Min-

Restricted to buyers of good character, and common sense restrictions.

Fine Shore Line Good Bathing

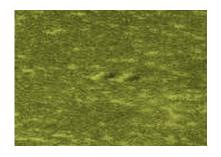
Right: Gas launch *Eleanor* around 1910 (Durand 1954, digitized by MHM).

Right: A map of Upper and Lower Prior Lake showing water depth. MHM's sonar transects were primarily west to east except in the narrow areas (Department of Natural Resources 1976).

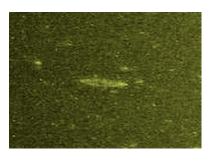


Prior Lake Sonar Survey Results

MHM has identified 50 anomalies in the sonar footage recorded during the remote sensing survey of Upper and Lower Prior Lake. MHM has determined that the acoustical signatures of 4 anomalies indicate they are wrecks (A3, A6, A10, A18), another is a probable wreck (A36), 1 is a probable wreck or dock (A7), and 1 is a probable dock (A12). Due to MHM's experience with other sonar survey results from Lake Minnetonka and White Bear Lake, 3 anomalies (A4, A28, A41) are boat lifts, boat canopies, or boat lifts with canopies. These maritime sites are usually casualties of high winds. One anomaly appears to be a power pole, telephone pole, or possibly a railroad signal light (A5)¹. Anomalies 13 and 21 are significant to Minnesota maritime and underwater archaeology, maritime history, and fishing history. These large anomalies on the bottom of Prior Lake are poke nets - or at least poke net 'frames' - one collapsed and one standing. These structures are about 800 and 830 feet long each. Poke nets hang on poles under water and snag fish, and are well known in Scotland where they are placed in tidal zones. It is unknown who erected Anomalies 13 and 21 without further research.2 However, the Department of Natural Resources has used seines for decades to catch fish for various reasons. The anomalies below are in random order and the potential to provide significant nautical archaeological data are prioritized as High (1), Medium (2), or Low (3). These numbers will assist MHM when designing future nautical archaeological reconnaissance projects using SCUBA.



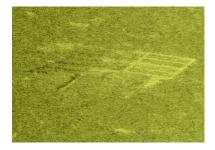


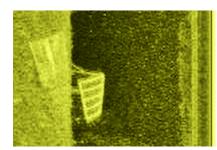


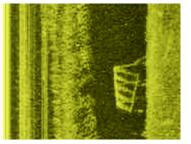
PL-A1 (2)

PL-A2 (2)

PL-A3 – Wreck (1)



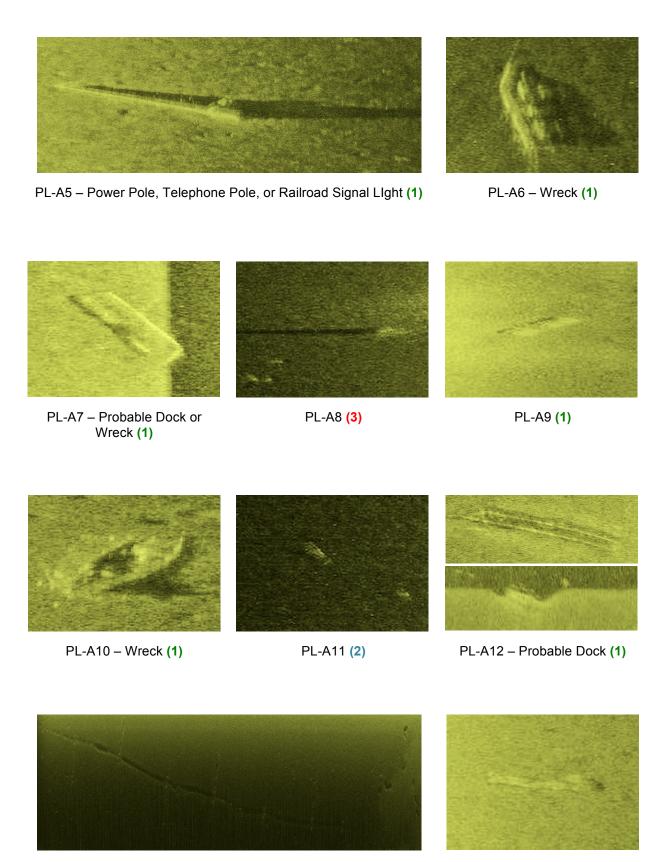




PL-A4 - Boat Llft/Canopy (1)

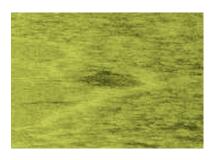
¹Anomaly 5 lies in an area where a railroad line used to cross the lake; the railroad bridge has been dismantled.

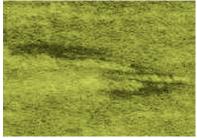
²Lake Sylvia, Medicine Lake, and Lake Johanna also contain poke nets.

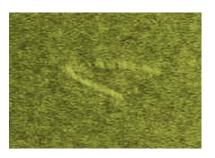


PL-A13 - Collapsed Poke Net/Frame (1)

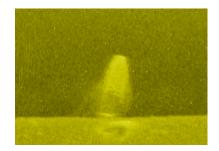
PL-A14 (3)

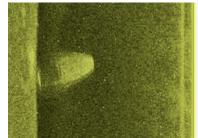


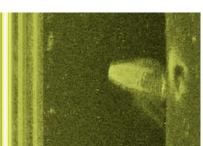




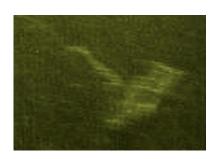
PL-A15 (3) PL-A16 (3) PL-A17 (2)



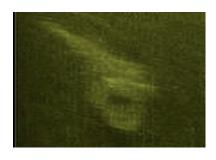


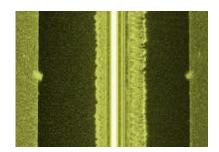


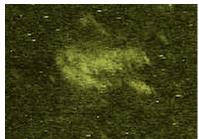
PL-A18 - Sailboat Wreck (1)

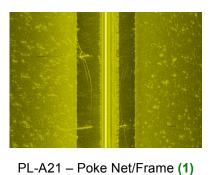


Left and Right: For comparison, MHM recorded sonar images of Lickety Split, a Capri sailboat that sank during a regatta on Lake Minnetonka in 2016. Even in 60 feet of water, the sail moves because of propeller wash, creating different images of the wreck.









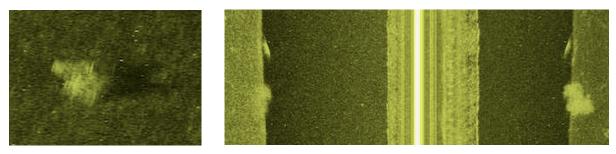
PL-A19 (2) PL-A20 (2)



PL-A21 – Poke Net/Frame (1)



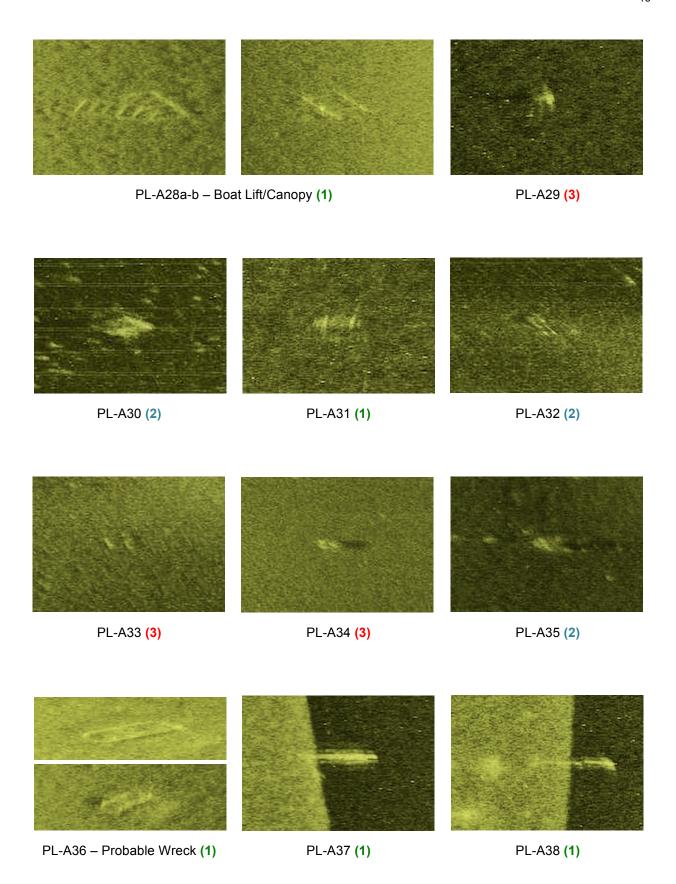
PL-A22 (3) PL-A23 (2)

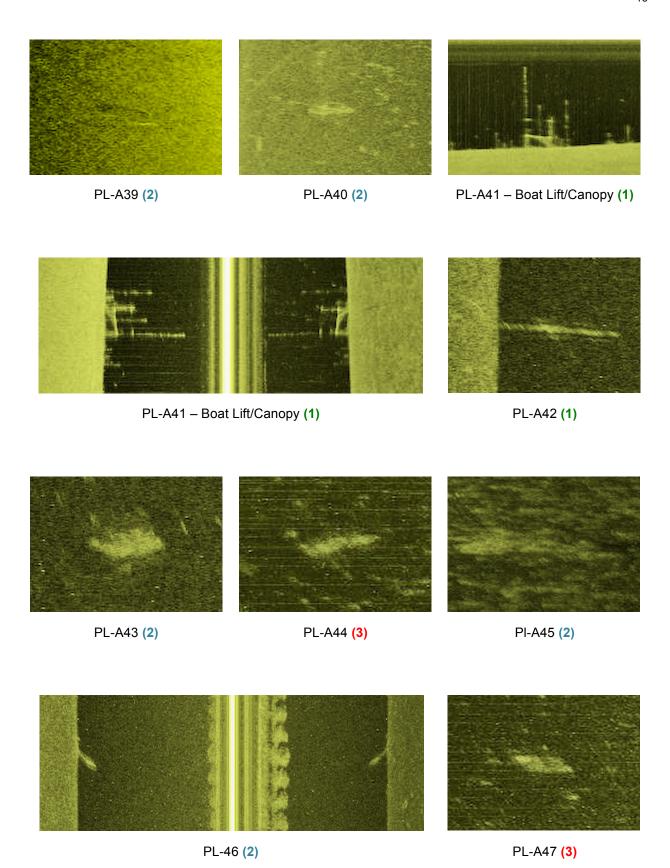


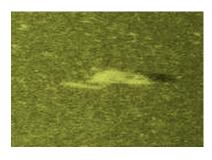
PL-A24 (1) PL-A25 (2)

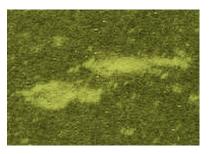


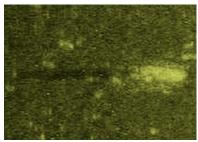
PL-A26 (1) PL-A27a-c (3)











PL-A48 (1) PL-A49 (2) PL-A50 (2)



A poke net for tidal salmon fishing in Scotland.

Conclusion

During the Prior Lake Sonar Survey, MHM recorded several interesting and promising anomalies using remote sensing side and down-imaging sonar. Of the 50 anomalies, A3, A4, A5, A6, A7, A10, A13, A18, A21, A28, A36 and A41 produce the greatest amount of archaeological data that will assist in future research and diving planning. Anomaly 18, a sailboat wreck with the sail still raised, is archaeologically and historically unique - no other wreck yet identified in Minnesota has a raised sail. Further the documentation of the poke nets (A13, A21), particularly A21, will greatly enhance our shared knowledge of Minnesota's maritime and fishing history. The MSLS Project produced interesting and significant results; MHM recognized 253 anomalies on the bottom of the 6 lakes documented during the surveys. Particularly important is the identification of 13 wrecks through their distinctive sonar signatures, another 22 possible wrecks, 6 poke nets, 5 boat lifts/canopies, and many other maritime sites. The exact nature of the wrecks and other sites will be determined during subsequent projects centered on their investigation by nautical archaeologists using SCUBA. These future studies will greatly enhance our shared maritime history through the recognition of submerged cultural resources and the stories behind their construction and disposition on the bottom of these particular 6 Minnesota lakes. The diversity of nautical, maritime, and underwater sites so far identified by MHM in Minnesota's lakes are tangible examples of the rich maritime history of the area. Through research, diving on wrecks and anomalies to collect pertinent data, and ensuring that the collected information is accessible by the public, MHM will continue to investigate Minnesota's submerged cultural resources into the future. The results of the MSLS Project summarized above is connected to all the work that will come after its completion. It is clear – even through this Phase 1 remote sensing survey - that the types of sites that exist in the 6 small lakes documented during the project are diverse, archaeologically and historically significant, and worthy of great attention.

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